

15c

# SCIENCE NEWS LETTER



THE WEEKLY SUMMARY OF CURRENT SCIENCE OF GENERAL INTEREST

TECHNOLOGY DEPT.

PUBLIC LIBRARY

JUN 20 1944

DETROIT



Care of Wounded

See Page 390

A SCIENCE SERVICE PUBLICATION



Courteous  
Calm  
and  
Competent

These are traditions of the telephone business.

The courtesy born of competence and the calm, sure speed that comes from knowing how.

Learned in peace, these are valuable traits in war when Bell System people are under more pressure than ever before.

Even in today's rush and hurry, "The Voice With a Smile" keeps right on being a part of telephone service.

BELL TELEPHONE SYSTEM



*When you're calling over war-busy lines, the Long Distance operator may ask you to "please limit your call to 5 minutes." That's to help more calls get through during rush periods.*

## PUBLIC HEALTH

# Meningitis Preventive

**Sulfadiazine has cut down meningitis deaths in the Army by 90%. Epidemics can be warded off by giving the drug to all members of a unit.**

► A SAVING of 90 out of 100 soldier-lives from meningitis death has been achieved by sulfadiazine, figures from the Office of the Surgeon General show.

The meningitis death rate in our Army in the present war is less than 3%, whereas it was 93.2% in the Revolutionary and Civil Wars and 39.2% in World War I, the War Department announced.

The germ that causes meningitis is so susceptible to sulfadiazine, the Army's commission on meningitis has found, that as little as two grams (about one-fourteenth of an ounce) of the drug will banish the germs from the nose and throat of most persons for a period of several weeks.

"This fact makes it possible to head off epidemics by the occasional adminis-

tration of sulfadiazine to all members of a military unit, especially under such circumstances as embarkation on a troopship," the War Department announcement states, crediting the explanation to Dr. John J. Phair, of the School of Hygiene and Public Health, Johns Hopkins University, who heads the commission on meningitis.

"Of 100 soldiers tested in experimental work at Fort Meade, Md., 92 showed presence of the germs on several occasions during the test period of 68 days. None was sick, apparently because the majority has an immunity to the infection. It is only when large numbers of men, some immune, some not, are thrown together, as in military camps, that epidemics occur."

*Science News Letter, June 17, 1944*



**FM WALKIE-TALKIE**—The range of this new radio exceeded all expectations during training operations and is regarded by the Signal Corps as one of their most valuable items of radio equipment.

## ENGINEERING

# Laboratory Dust Storms

**Volcanic ash from Arizona is blown onto Army trucks for as long as 50 hours to test their wear from dust and sand.**

► AUTOMOTIVE engineers are creating artificial dust storms to supplement field tests of Army motor cars and of dust-proofing devices, the National War Materiel meeting of the Society of Automotive Engineers was told by R. P. French, of the Studebaker Corporation. The controlled storms serve the purpose better than the natural variety. Mr. French explained that storms may be produced upon demand without relying upon the whims of the weather, and dust or sand of any type and from any part of the world may be used in the tests.

A dust-test room, for Army engineers and the SAE War Engineering Board, was built for the purpose of studying how to protect motor vehicles operated in dusty regions against excessive wear caused by dust and sand.

In a typical test, an Army truck is placed in the dust-test room, fan blades and compressed air jets blow up the

dust for as long as 50 hours, while engineers watch from a special observation chamber.

The dust used in most tests is a highly abrasive pure volcanic ash, obtained near Phoenix, Ariz. Sand-blast refuse, practically pure silica, is also used.

Mr. French reported results as showing that dust passes through the air cleaners of engines in great quantity and causes as much cylinder wear in 1,000 miles of test operation as would result from 20,000 miles on the road.

Generators and starters become packed with dust, which sometimes wears away insulation from wires and makes the starter inoperative. Clutch housings fill with dust, and ignition coils and high-tension wires attract a coating of dust which holds moisture.

Brakes also collect dust, but little reaches wheel bearings. In spite of closed doors and windows, Army truck cab interiors get a quarter-inch dust layer.

Samples of oil, taken after a 50-hour test, showed sediment by volume to be as high as 3.8%, in the transfer case.

Mr. French concluded that there are indications the dust room will facilitate developing methods for protecting passengers as well as mechanical parts from dust and damage.

*Science News Letter, June 17, 1944*

## Records Detonation

► DETAILS of the design, development, and operation of a new indicator for measuring vibration in engines, recording detonation, measuring pressures in guns, and even making jet propulsion studies were described by C. E. Grinstead, R. N. Frawley, F. W. Chapman, and H. F. Schultz, all of Research Laboratories Division, General Motors Corporation, at the National War Materiel meeting.

Not only does the new indicator take measurements, it was explained, but used in combination with a camera, it makes permanent visual records of engine performance.

The electrical condenser-type indicator was described as being small enough to permit installation in modern engines, so rigid as to eliminate the effects of vibration, and so critical as to register manifold pressure changes of as high as 6,000 cycles a second. (Turn to next page)

In probing the secrets of engine operation, the engineers showed a calibrated, high-pressure, combustion-chamber rec-

ord of an aircraft engine running at 2,600 revolutions a minute.

Science News Letter, June 17, 1944

GEOGRAPHY

## Road to Paris

**The route from the center of the beachhead landings on the French coast to Paris passes through rolling country with many excellent roads.**

FROM the center of the beachhead landings along the 75-mile coast of the Baie de la Seine, it is approximately 150 miles to the city of Paris. The area between is known geologically as the Paris Basin. This extensive basin includes the valleys of the Seine, of the Somme to the north, and of the Loire to the south. Back from the low, level landing beaches the terrain of northern France consists principally of low rolling hills, well cultivated, with no elevations over 650 feet in height. Many excellent roads lead to the French capital.

An excellent mainline railroad also leads from the invasion area to Paris. It is a familiar line to many Americans who in prewar days landed from trans-Atlantic liners at the great port of Cherbourg on the tip of the Cotentin Peninsula and travelled from there to Paris. For some 50 miles or so it parallels the invasion coast from five to fifteen miles inland. Caen, the center of reported heavy early fighting between Nazi defenders and Allied paratroops, is on this line and about ten miles south of the center of the coast where the landings were made.

The river Seine which empties into the English Channel at Le Havre passes through Paris on its way to the sea. The distance is about 140 miles. The route to Paris from the invasion head follows the course of the river. The area between the invaded coast and the hub city of France contains many cities and towns and a large population.

The Allies in Normandy, once well established, will be admirably situated for inward drives in three directions. The central drive can follow the route directly eastward into Paris, to add that city to Rome in the list of liberated national capitals. The second could go directly southward to bottle up the German forces in the Brittany peninsula area. The third drive could turn to the northeast, paralleling the coast and passing through Rouen and Amiens. This

route is behind the Nazi coastal inland fortification line, reported to be some ten miles back from the coast defenses themselves. It leads on to Belgium and to Germany itself.

The summer months normally provide the best weather for invasion activities in the northern French area. Until the middle of September there will be a season of little rain, clear skies, warm days and cool nights. Country dirt roads are passable, dry fields can be crossed by jeeps, trucks and tanks. The waters in the English Channel and in the strait of Dover are more quiet than at other seasons.

Science News Letter, June 17, 1944

MEDICINE

### "Black Gold" for Repairing Broken Bones Is Shown

"BLACK GOLD" for repairing broken bones, torn nerves and broken skulls, soon to be available to civilian surgeons, was shown in various forms for surgical use at the meeting of the American Medical Association in Chicago.

"Black gold" is the nickname of the coal black ore, tantalite, from which the lustrous gray metal, tantalum, is derived. This metal is not irritating to living tissues, is ductile, malleable and resists corrosion.

It can be drawn into wire so fine the surgeon feels for it rather than sees it. In this form tantalum is used to repair nerves and to make surgical stitches where cosmetic results are important. Metal sheets so pliable they can be molded to fit the body's contours can be used to replace lost parts of the skull, ears, noses and other parts of the face.

One war veteran has a tantalum "belly wall," according to a report from the Johnson and Johnson Research Foundation which, through its subsidiary, the Ethicon Suture Laboratories, is sponsoring the exhibit.

Tantalum supplies are limited, so its use, except for research purposes, has heretofore been limited to the military services. It will soon be available to civilian surgeons through a War Production Board allocation, Dr. Gustav S. Mathey, president of the Johnson and Johnson Research Foundation, announced.

Science News Letter, June 17, 1944

## SCIENCE NEWS LETTER

Vol. 45 JUNE 17, 1944 No. 25

The weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington 6, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents. Monthly Overseas Edition: By first class mail to members of the U. S. armed forces overseas, \$1.25 a year. To others outside continental U. S. and Canada by first class mail where letter postage is 3 cents, \$1.25; where letter postage is 5 cents, \$1.50; by airmail, \$1.00 plus 12 times the halfounce airmail rate from U. S. to destination.

Copyright, 1944, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature. Abridged Guide, and in the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STate 4439.

SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

*Board of Trustees—Nominated by the American Association for the Advancement of Science:* Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research; Henry B. Ward, University of Illinois. *Nominated by the National Academy of Sciences:* Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. *Nominated by the National Research Council:* C. G. Abbot, Secretary, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. *Nominated by the Journalistic Profession:* A. H. Kirchhofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. *Nominated by the E. W. Scripps Estate:* Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

*Officers—President:* Edwin G. Conklin. *Vice President and Chairman of Executive Committee:* Harlow Shapley. *Treasurer:* O. W. Riegel. *Secretary:* Watson Davis.

*Staff—Director:* Watson Davis. *Writers:* Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow. *Science Clubs of America:* Joseph H. Kraus, Margaret E. Patterson. *Photography:* Fremont Davis. *Sales and Advertising:* Hallie Jenkins. *Business Manager:* Columbus S. Barber.



**STORM BOAT**—Making themselves as small as possible to reduce the target and lower the center of gravity, a squad starts for its objective in the new plywood craft of the Army.

## ENGINEERING

## Plywood for Spearheads

Storm boats of five-ply birch are being used in all theaters of operation to cross wide streams. The light craft carry 9 men, travel 23 miles an hour.

► NEW STORM boats made of plywood are being used by the Army in all theaters of operation to throw spearheads of assault troops across wide streams before bridges can be built.

Carrying a fighting team of seven fully equipped riflemen commanded by a non-commissioned officer, and a crew of two, the boat, propelled by a 50 horsepower motor, will move at 23 miles an hour, fast enough to make it a difficult target. On the return trip for more men, ammunition, or other vital supplies, with only a two-man crew it will hit up to 35 miles an hour. In an emergency it may be rowed.

The boat is 16.7 feet long by 6.5 feet wide, and weighs 650 pounds, with motor. It will carry loads of more than 1,200 pounds, drawing 16 inches while underway, 20 inches when motionless. It is not intended for surf or rough-water use.

In action, the soldiers lie face down,

head to bow, rifle in hand, and leap out, ready for combat, the instant the boat touches shore.

The landing may be a simple slowing down at the river bank up which the assault troops scramble or, if the shore is low and shelving, the light craft may be beached head on at full speed, tobogganing it high and dry. The outboard motor tilts up, away from damage, as the boat is beached. Special handles built into the gunwales make it easy for eight men to carry the boat.

The craft is constructed of flat and molded plywood, birch being used for the outer bottom and sides. Five-ply birch plywood, quarter-inch thick, is hard and resistant to abrasion from pebbles and sand when beached. Other parts of the boat are made from white oak, mahogany, and hickory plywoods.

The new storm boat was designed by a board of U. S. Army Engineers, and is now made by several builders.

In the postwar world, such a boat will be ideal for fishing and camping trips on the rivers and lakes of the United States. It is small, easy to handle, will carry a number of persons and supplies as well, and it can be carried by eight persons.

Science News Letter, June 17, 1944

## PSYCHOLOGY

## Tales of the "Supernatural" Are To Be Expected

► WITH the invasion begun and with so many more loved ones and friends in greater danger than ever before, there will undoubtedly be many more wishful yearnings toward what, to the uncritical, may seem to be unexplained and therefore "supernatural" phenomena.

On invasion day there was a double rainbow observed and reported in Washington, a meteorological phenomenon that goes without press comment on any other day. (The secondary rainbow is due to light undergoing an additional reflection and its colors are in the reverse order of the brighter rainbow.)

German propaganda sources thought it necessary to deny that the recent finding of a comet was a bad omen for the German arms. (The fact that small comets are found frequently, that this one was visible only through large telescopes in the southern hemisphere and that the discovery was made by Allied astronomers seemed to make no difference.)

We can expect the inevitable stories of mothers and sweethearts who have seen in dreams just what does happen to their soldiers at exactly the same time that it does—some will be saved "miraculously" and others will be killed. Thousands upon thousands of dreams and nightmares that don't come true will go unrecorded.

There will be hopeful attempts to communicate with the dead. Well remembered is the famous British scientist, Sir Oliver Lodge, who attempted to communicate with his soldier son killed in the first World War.

Superstition in this war has had relatively little prevalence compared with the situation in past years. One hears little about those who avoid or prefer the number 13, or the old foolishness about a black cat. Astrologers do not seem to be unusually affluent or active.

In these stressful times, however, those who attempt to live rationally will need to take a hitch in their critical faculties and be alert to superstitious invasion that may well interfere with our fighting the war.

Science News Letter, June 17, 1944

MEDICINE

# Aid For The Wounded

**Corpsmen, carrying no weapons, but only medical instruments, have landed and are in the midst of the fighting, beside soldiers.**

By JANE STAFFORD

See Front Cover

► DURING the invasion of Europe, medical aid men of the Army or hospital corpsmen of the Navy or both have gone ashore and into the fighting with our soldiers, sailors and marines.

Shouldering no guns, these expertly trained men carry instead weapons against death from battle wounds, weapons which are the best medical scientists can devise.

Holding the front line against pain, germs, hemorrhage, crippling and death, they take the first steps in the swift, efficient chain of events which gives our wounded fighting men a better chance of recovery than any fighters in the history of military medicine.

As a result, in the fighting before the invasion of Europe, we have been saving twice as many of our wounded as were saved in the last war.

When an American soldier is wounded in battle, he has on his person two important aids to his recovery. One is a first aid kit containing a sterile bandage for his wound. The other is sulfa drug pills carried in a shaker-type, easy to manipulate, plastic container on his belt. He has been taught to take these as soon as he is wounded, if he possibly can, so that their aid in the fight against germs invading through the wound will start at once.

## Tourniquet and Morphine

The medical aid man is soon by his side to give further first aid. He looks first for signs of hemorrhage and swiftly applies a tourniquet to stop it. A drink of water if the man is conscious and morphine to ease the pain, and the medical aid man is off to the next wounded man. He does not stop for splints or any other first aid treatment because his job is to stop the most dangerous threat to life, hemorrhage, and because litter bearers are right behind or even with him to carry the wounded back to the battalion aid station.

This is as close to the fighting as possible, probably from 300 to 700 yards

back of the front. Here plasma is given, broken bones are splinted, bandages applied and morphine given if necessary. Usually no surgery is attempted at the battalion aid station.

From the battalion aid station the wounded are taken to the collecting station, which is located as close to the front as possible, but which may be anywhere from two to six miles back, depending on the terrain, fighting, and so on. This trip may be made by hand-carried litters, in jeeps or ammunition trucks. Ambulances do not usually go this far forward. Instead, vehicles used to bring up supplies carry the wounded back.

At the collecting station the wounded are classified as to type of injury, treatment given so far is noted and a complete record made. Some of the men may have such slight injuries that they can be treated on the spot and sent back to the front.

Here, too, a mobile surgical unit may appear, equipped to operate and care for

chest wounds, head injuries, badly crushed limbs and other serious conditions that may require immediate attention.

These units carry in their truck all equipment, including a separate power plant, wet and dry sterilizers, medicines, splints, plaster-of-paris, bandages and a tent which lets down from the side of the truck to form an operating room. Two surgeons, two surgical nurses or specially trained technicians and enough enlisted men to set up the operating tent, run the sterilizers, and so on, make up the personnel of this unit.

Next stop in the swiftly moving chain of evacuation for our wounded men is the clearing station. Here, if they have not already been treated by a mobile surgical unit, the men with wounds requiring immediate surgical attention are given it. Others have the dressings on their wounds examined and changed if necessary. Broken bones may be set in splints or in plaster-of-paris casts. Here, too, is the first place where the wounded are likely to see nurses. The clearing stations are, generally, as far forward as nurses are allowed to go.

From the clearing stations the men are moved back to the evacuation hospitals. This trip may be made by ambulance but quite often is made by rail, in hospital ward cars, again using the same line that



**D-DAY TREATMENT**—Back already on the shores of England and being carried to waiting ambulances, these first casualties will have reached the hospital on the same day as the invasion. This Signal Corps photograph and the Canadian photo on the cover showing casualties on the beach in France were radioed to the United States.



**FIRST AMERICAN CASUALTY**—This radioed Signal Corps photograph shows a paratrooper suffering from a head wound who has been speeded by airplane to England for treatment.

moves supplies forward. The evacuation hospitals are usually from 14 to 300 miles back of the lines, but their location depends somewhat on the military situation. At Salerno some evacuation hospitals were set up right on the beach within a few hours after the troops had landed.

#### Real Hospital Care

The evacuation hospital is the first place where the wounded get what is called "definitive" treatment, meaning more than life-saving first aid and emergency surgical care. Here they get their first real hospital care, including medicine, surgery, nursing and even special diets. In these hospitals some of the wounded may make a complete recovery and return to the front.

Air evacuation, however, has been developed to such an extent in the war that few of the wounded in the European invasion are likely to remain long in evacuation hospitals. They will be flown to base hospitals overseas or to general hospitals here at home. More than 176,000 sick and wounded patients of United States and Allied forces were evacuated by American military aircraft during 1943.

Beds in the evacuation hospitals are thus quickly emptied to make room for the next contingent of wounded.

The base hospitals overseas are regular general hospitals, equipped and staffed to give complete care for every kind of

injury or illness. Men likely to recover fairly soon, a man with a broken leg or arm, for example, are kept at these hospitals until they are well. Those whose injuries may take months to heal, however, or who will have to undergo a long period of convalescence and retraining in the use of arms, legs or fingers, or who are destined to be discharged from the Army for medical reasons are evacuated as soon as possible to general hospitals at home.

The Navy's medical setup on land for treatment of marines wounded during

#### PSYCHIATRY

## Mental Combat Casualties

If the soldiers wounded in mind in severe combat get treatment of the right sort near the front, eight out of ten of them get back in the fight.

By MARJORIE VAN de WATER

► BATTLE CASUALTIES are not all wounds of the flesh. One, two, or in some engagements three men out of every ten injured in battle have mental or emotional wounds. They are the victims, not of shot and shell, but of extreme fatigue, exposure, hunger, isolation, confusion, prolonged and acute danger of death or mutilation and,

invasion is similar to the Army's. Hospital corpsmen, like the Army's medical aid men, go right into the fight with the marines, but are armed only with their first aid kits. They are equipped and trained to do minor surgery, care for fractures, stop hemorrhage and treat shock. They carry syrettes of morphine for easing pain and sulfa drugs for fighting infection.

Following first aid by the hospital corpsman, a wounded fighter is carried to a nearby field hospital. These are portable units set up under canvas almost on the firing lines. Here the first-aid treatment is supplemented, and, if necessary, the patient is prepared for quick transportation to the nearest advanced base hospital.

The advanced base hospital is the Navy's medical answer to amphibious warfare. It is a specially designed unit of varying size, which can be quickly set up and easily moved as the fighting front progresses. It may house from 25 to several thousand beds. Each has its special equipment and complement of personnel according to its special needs, for the advanced base hospital is functioning from the equator to the Aleutians.

Sometimes, however, a wounded man needs immediate surgery and the elaborate care and equipment possible only at the big hospitals far from battle. For these emergency cases, the Navy operates a fleet of special ambulance planes, carrying up to 30 wounded. As soon as an advanced base is occupied, the naval construction battalions build airstrips for these planes, and the long trip to a safe-area hospital is reduced from days to hours.

Science News Letter, June 17, 1944

sometimes, the fear that they may lose their soldierly self-control and become cowards.

If these mental battle casualties are properly recognized and treated in the front lines, up to 80% can be returned to combat duty, some of them within a few hours.

But if they are not diagnosed and treated immediately, but sent back to rear areas, only (Turn to page 394)

## MEDICINE

**Plastic Better Than Plasma In Treating Shock in Rats**

► A SPECIAL solution of the plastic, polyvinyl alcohol, proved more than twice as effective as plasma in saving rats from dying of shock in studies reported by Surgeon Lieutenant William Locke, of the Royal Canadian Navy. (*Science*, June 9). The studies were made with the assistance of Warrant Officer J. Scattergood and the advice of Lt. C. R. Cowan at the Banting and Best Department of Medical Research, University of Toronto.

The rats were in shock as a result of having metal tourniquets applied high on both hind legs for five hours. When the polyvinyl alcohol solution was given as immediate treatment for this shock, 65% of the animals survived. When plasma was used, 25% of the animals survived. Survivals were 40% with salt solution, 25% with isinglass, and 8% in untreated controls.

Since these results apply to treatment of shock in rats under special conditions, speculation on application to humans is probably not warranted at the present time.

*Science News Letter, June 17, 1944*

## ENGINEERING

**With New Type Pontoon Navy Can Build Many Units**

► THE NAVY'S modern pontoons can be turned into self-propelled barges, tugs, floating wharves, causeways, fuel and water barges, floating drydocks and piers, simply by bolting them together in strings.

The new pontoon gear consists basically of prefabricated hollow boxes made of light, welded steel. The boxes are made in two styles. One, the standard section, is rectangular in shape, five feet by seven feet on top and five feet deep. The other section is seven feet by seven feet on top, has one end curved for use as the prow on barges.

Unlike the old, round-type pontoon, the Navy's modern gear is less cumbersome and can be adapted to many uses. Because of this adaptability Allied forces have been able to throw onto the enemy beach thousands of tanks, guns, trucks, munitions and other supplies in record time.

Supplies of pontoons can be placed aboard invasion-bound ships and assembled en route into self-propelled barges, using an outboard motor. At the scene

of operations the barges are put over the side and are used to transfer men and materiel from the boats to the beach. When the unloading job is done, the barges may be dismantled and used for wharves, piers, floating drydocks or unloading ramps.

The boxes are built to withstand heavy internal and external pressure, and are strong enough to stand the wheel loads for which civil highway bridges are normally designed.

*Science News Letter, June 17, 1944*

## CHEMISTRY

**Easy-To-Remove Coatings Used for Shipping Goods**

► PLASTIC COATINGS that are easy to strip off are being used successfully in shipping vital wartime goods. A report of the success of this new application for these coatings was given by C. E. Heussner and C. O. Durbin of the Chrysler Corporation, at the National War Materiel meeting of the Society of Automotive Engineers.

The new coatings, known as stripping compounds, usually contain ethyl cellulose combined with various oils and plasticizers. They were developed to give protection to metal parts which would be equal to giving them a coating with oil or grease, wrapping in paper and sealing.

The coatings are applied by dipping the part in the plastic at a temperature of 325 to 375 degrees Fahrenheit.

The new coatings protect parts from high humidity, rain and ocean spray. They set quickly after coating, remain hard at high temperatures, and do not crack or break in the cold.

The most important advantage of this type of coating is the saving in manpower and floor space, paper and wrapping materials. Much less handling and equipment are required in using the plastic coating than in other methods of protection. When the articles are being made ready for use the coating is quickly stripped away.

In many cases the coated parts are placed in fiberboard cartons, without extra wrapping. The strength of the fiberboard cartons depends upon the size and weight of the parts. Cartoned parts are given further protection for overseas shipping by packing in nailed wooden boxes.

While only small, simple parts are being prepared for stripping with plastic coatings, the number of parts is rapidly increasing with new methods of application.

*Science News Letter, June 17, 1944*

**IN SCIENCE**

## CHEMISTRY

**New Magnetic Stirrer For Laboratory Use**

► CHEMISTS generally can be expected to get a "kick" out of an ingenious invention on which Dr. Arthur Rosinger of Newark, N. J., has received patent 2,350,534. It is on a motor-driven stirring device that does not need to have a rod sticking down into the beaker or other vessel, more or less like a malted-milk mixer.

The idea is simplicity itself. Suitably supported underneath the beaker is a small motor, carrying a permanent horseshoe magnet at one end of its shaft. Lying on the bottom of the beaker, within the field of magnetic force, is a short bar magnet. When the horseshoe magnet is spun by the motor, the bar magnet must spin, too, and that takes care of the stirring. To keep the metal from reacting with the contents of the beaker, it is embedded in rubber, plastic, glass or other suitable substance.

*Science News Letter, June 17, 1944*

## ASTRONOMY

**Faint Comet Discovered In South African Skies**

► A FAINT comet has been discovered by Dr. H. van Gent, Dutch astronomer at present on the staff of the Union Observatory at Johannesburg, South Africa. Located in the constellation of Vela, the ship's sails, it was of the 12th magnitude.

Moving northward, the comet may eventually become high enough above the southern horizon for northern observatories to sight it. Further observations must be made, however, before it can be determined whether the diffuse-appearing comet is increasing or decreasing in brightness. At present it is far too faint to be spotted by amateur astronomers.

The position of the comet on May 23, as cabled to Harvard Observatory, astronomical clearing house for the United States, was at right ascension 9 hours 25 minutes, and declination minus 49 degrees 20 minutes.

Dr. van Gent also discovered a ninth magnitude comet last November.

*Science News Letter, June 17, 1944*

## ENE FIELDS

## CHEMISTRY

**Color of Smoke in Photo Betrays Type of Plant**

► SHAPES and sizes of objects are not the only way that we learn of enemies' activities through photographs. The Air Corps' expert photo interpreters can often tell what a plant is manufacturing just by the color of the smoke issuing from its stacks or by the color of the piles of refuse and by-products lying about.

Color photography is playing a vital part in aerial photographic reconnaissance, stated Maj. Raife G. Tarkington, chief of the technical services branch of the Army Air Forces photographic laboratory at Wright Field. Excellent color pictures can be made today from altitudes as high as six miles. Successful pictures at night have been taken as high as four miles above the earth's surface.

"Striking proof of the importance of such photographic intelligence was evidenced near the end of the Tunisian campaign," Major Tarkington pointed out, "when all action ceased for two full days just because weather prevented the 'recon boys' from getting the photographic information that the ground commander considered vital. Think of that—the war stopped because of no pictures!"

*Science News Letter, June 17, 1944*

## ENGINEERING

**British Engineers Honor Two U. S. Technologists**

► ORVILLE WRIGHT, who with his brother made the first successful airplane flight 31 years ago, and Dr. Harvey N. Davis, well-known for his work in the field of thermodynamics and as president of Stevens Institute of Technology, became the third and fourth Americans in history to receive certificates of honorary membership in the British Institute of Mechanical Engineers. Lord Halifax, the British ambassador, made the presentation to Dr. Davis and Dr. Robert Gates, president of the American Society of Mechanical Engineers, who accepted for Mr. Wright in his absence.

Lord Halifax referred to Mr. Wright as a "notable and gallant pioneer." He added that time would tell whether the

airplane which the Wright brothers gave to the world would prove to be of good or hindrance to the human race.

Upon receiving his certificate, Dr. Davis remarked, "I think that this occasion is a happy recognition of the happy relations between British and American engineers. Our cooperation has been vital in war and, I hope, will be even stronger after the war."

As a return gesture, Dr. Gates presented Lord Halifax with a certificate of honorary membership in the American Society to be transmitted to Dr. Harry R. Ricardo, noted for his work in the field of internal combustion and president of the British Institute.

Lord Halifax then presented the ASME with a copy of the famous Breda portrait of James Watt, Scottish inventor of the steam engine, as a gift from the British Institute. Watt was described by Lord Halifax as being the "patron saint of engineers."

The other two Americans who had previously received certificates of membership in the British Institute were Henry Ford and Dr. Alexander G. Christie of the Johns Hopkins University.

*Science News Letter, June 17, 1944*

## NUTRITION

**Mineral Oil May Rob Body of Needed Nutriment**

► INCREASED use of mineral oil since the war may have serious nutritional consequences. Non-rationed mineral oil robs the body of at least two of the fat-soluble vitamins, and of calcium and phosphorus, warns the U. S. Department of Agriculture.

Mineral oil, which has been plentiful and relatively cheap as well as not becoming rancid, has been used in increasing amounts in salad dressings and in such foods as salted nuts, potato chips and doughnuts. Its prolonged use, however, may lead to deficiency ills because it prevents the body from making full use of some of the most important essentials in food.

Recent studies at the Arizona Station showed that mineral oil not only cheated the user of vitamin A, but also of vitamin D, the "sunshine vitamin," and calcium and phosphorus. Rats taking mineral oil needed three times as much cod liver oil to supply vitamin D as those not given the oil. Puppies fed mineral oil could not use the calcium and phosphorus in their food to build normal bones.

*Science News Letter, June 17, 1944*

## STATISTICS

**More Boys Under Twenty Married Since the War**

► ALMOST three times as many boys under 20 years of age were married in 1942 as in 1939, and many more women 35 and over were married within the last few years than before the outbreak of war, according to a report just issued by the Metropolitan Life Insurance Company.

A growing tendency for young boys to marry girls older than themselves was found in a study of records for New York State, exclusive of New York City, for the period 1939 to 1942. In 1939, 29.4% of these boys married older girls, whereas 31.6% took wives older than themselves in 1942.

During this period, more than half of the boys marrying at the young ages of 16 and 17 took brides who were their seniors. One-third of those marrying at 18 chose older girls, and more than a quarter married older girls at 19. In general, however, the brides were only slightly older than the grooms.

For every hundred women 35 or over who were married in 1939, 173 were married in 1942. Marriages among men 35 and over showed an increase of 65%. With the great number of marriageable men now overseas or destined for such service, marriages among older people will form an increasing proportion of the total marriages until the return of our young men.

A decrease in the number of marriages, felt in the country as a whole in 1943, will most likely be accentuated within the next few years.

*Science News Letter, June 17, 1944*

## GENERAL SCIENCE

**Crimes Against Science To Be Cited by Anti-Fascists**

► CRIMES of the German invaders against science and reconstruction plans for scientific and cultural institutions in the liberated areas will be discussed by scientists of the Soviet Union at an anti-Fascist meeting on Sunday, June 18. The meeting, to be broadcast all over the world, can be heard throughout the United States on Sunday morning.

In announcing the broadcast, Soviet scientists convey greetings to U. S. A. scientists and express the hope that collaboration and solidarity of men of science will speed victory for the United Nations.

*Science News Letter, June 17, 1944*

## From Page 391

five or possibly ten men out of a hundred will be fit for further military duty.

These facts, together with instructions for sorting and treating mental battle casualties, are contained in a circular letter (No. 176) distributed to all the medical officers in the U. S. Army Medical Corps from the Office of the Surgeon General.

### No Waiting

Modern medical skill and experience are insuring that men with mental wounds get the kind of treatment they need right at the front when the need is most urgent. There must be no waiting around for diagnosis. No evacuation to rear areas for treatment. With the same urgency that morphine is shot into the arm of a soldier in great physical agony, medical officers here give the mentally wounded a heavy dose of a drug that will quiet his nerves.

Morphine is not used. The shot in the arm that is the common prescription for physical pain is avoided. He is not given anything that would turn him into what the Army calls a "litter case"—a patient that must be carried because he cannot sit up or walk.

The drug used for the man who has cracked up mentally is what is known to physicians as a sedative—one that will act very quickly. It is soothing to jittery nerves. It lowers the soldier's sensitiveness to noise—the thunder of guns or blast of bombs and the cries of wounded or dying men. His other senses are just a little dulled, too, so that he is not so painfully aware of everything going on around him.

The "heavy sedation," as this dose of drug is called, is the first step in this front line treatment of the mental casualties of battle.

★ ★ ★ ★ ★ ★ ★ ★ ★

## WYOMING

Yes, even THIS summer you may fish in its mountain streams, ride horseback through its hills and canyons, find Indian relics and marine fossils in a region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch in the Big Horn country. They offer plenty of ranch grown food, comfortable cabins and gentle horses. May they tell you more? Write:

**Paton Ranch, Shell, Wyoming**



**MEET THE CHAMP**—A while ago we heard much about a terrible weapon the Germans had put into action, the 170 millimeter gun. Now it has its answer, in the bigger and in every way more powerful American 200 millimeter (eight-inch) rifle, shown here side by side with a captured specimen of its German rival, at the Army's great proving ground at Aberdeen, Md. The American weapon's 250-pound shell weighs nearly twice as much as the 170-millimeter projectile, and its extreme range of 20 miles is two miles greater than that of the German gun. The American piece also has a much better carriage, permitting road speeds at least double the best the German gun can do, and also making handling in firing position much easier and more rapid. (See also SNL for June 10, p. 374.)

With it is also administered large doses of reassurance. It is badly needed. A soldier who has stood up under all sorts of punishment from the enemy may very well be terrified at the change that has come over himself when his nerves crack up. Especially for the man who is new in combat and has not seen other men break, it is a frightening experience. He needs to be told that it is not a permanent change. That he is not "crazy." That he is not "yellow." That he will get back his speech and his self-control when he has had rest and treatment.

Rest. That is the chief medicine. Given the time for rest and the sedative that makes rest possible, the human mind restores itself. Physicians in this war, as in all wars, are continually amazed at what men can go through. They may be knocked out of the fight temporarily. But eight out of ten men, if given rest and treatment soon enough, will come right back—with a grin and

plenty of fighting spirit in them, too.

So for some of the soldiers given this emergency front-line treatment it is all that is needed. They can go right back into the fight. It is better for them if they do. To go back of the lines would only make their condition worse.

Others will require more. They will be sent back without delay to the evacuation hospital for further treatment.

Evacuation hospitals may be anywhere from 14 to 300 miles back of the front lines, but they may be, as at Salerno, right on the beach where troops are landing and where the fighting is not more than a few hours past.

At the hospital the soldier who is a psychiatric casualty gets immediate attention. First comes a rapid examination to find out how serious his battle sickness is, and a medical diagnosis is made.

Sleep is the major part of the treatment for the mental battle casualty in the evacuation hospital. He is given frequent and heavy doses of a soothing

sedative drug to quiet his nerves. Exhaustion and the relaxing effect of the drug make it possible for him to spend most of his time sleeping for two or three days and nights.

In order that he won't think of himself as physically ill, he gets up for all meals and stands in line, cafeteria fashion, with the rest of the "up" patients. He is also responsible for keeping the part of the ward around his own bed tidy; this is to keep reminding him that he is a soldier and expected to perform the duties of one so far as his condition at the moment permits.

Aside from sleep, food, warmth and the soothing sedative, the treatment for mental battle casualties is mental treatment. He is reassured again and again—told that he is sick, but the sickness is only temporary. He will get well. Each man is given careful, patient explanation of just why and how he is ill. This instruction has two purposes. First, the man who understands what is the matter with him can help himself to get well, and recovery from mental injuries depends a great deal on the patient's own efforts. But, in addition, the frank but sympathetic talk makes the soldier realize that the physician is interested in him. He gets no brush off here, no feeling that people have no time to bother with him. This is of extreme importance in fitting the soldier to return to combat.

#### Needs His Friends

It would take a superman to face enemy fire feeling that he is alone. Hardest experience to bear in combat is the feeling of being the only one man left alive in a trench, a foxhole, or a particular area. Alone against the enemy. Alone with not even a flimsy shelter against assailing death. A man who has had this desolating experience gets a defenseless, helpless feeling. Before he can summon spiritual strength to go back into battle, he must regain the feeling that he is one of a group, that he is not alone, that his own stand with him ready to help him.

Exhaustion is so universally one of the causes of mental battle casualty, that front-line medical officers and Corps men are instructed to mark the emergency tag tied on these cases just "exhaustion."

Only those who do not snap out of it under treatment in the forward areas and who are sent back to evacuation hospitals are given a psychiatric diagnosis. It is found that five different kinds

of mental illnesses can develop under the stress of battle.

By far the most common of all the mental battle wounds is known to medical officers as psychoneurosis of the anxiety type. It is what you hear your neighbors call a "nervous breakdown." Jittery, on edge, over-sensitive to noise and sudden movements, unable to sleep or when he does sleep tortured by horrible nightmares of battle, a soldier thus wounded in spirit may suffer more than does the man with a shell fragment in his leg or with a fractured jaw. They

are unable to forget the bloody, sickening scenes they have witnessed.

Another type of neurosis, called hysteria, causes the soldier to lose the use of one of his senses or some body part. He may be suddenly struck blind or deaf or unable to speak. He may have a paralyzed leg or arm. Nothing is organically wrong with these injured men; the wound is mental or emotional. But they are as truly disabled as though they had lost a part of themselves instead of losing the use of the part.

Hysteria was a (Turn to next page)



OFFICIAL U. S. NAVY PHOTOGRAPH

**LIGHT LOSS CUT 50% by**  
*Hard Coating Lenses and Prisms*  
*in Bausch + Lomb Binoculars.....*



Bausch & Lomb  
 7X, 50mm Binocular



Such an increase in light transmission now means an image 50% brighter. It also means reduced internal reflections and consequent flare—contrast sharpened. And this can mean, in many cases, to the observer with binocular glued to his eyes, the difference between a blank wall and a clearly defined silhouette of an enemy vessel or plane.

This special Bausch & Lomb process of glass coating is permanent—cannot be injured by any attack that would not injure a similar uncoated surface. Bausch & Lomb was first in the world, more than four years ago, to make commercial use of

this optical development. Every binocular produced by Bausch & Lomb—as well as the optical systems of many other B&L military instruments—has this coated surface treatment.

When you buy your new Bausch & Lomb Binocular after the war, you will enjoy this amazing light transmission advantage.

**BAUSCH & LOMB**  
 OPTICAL CO. ROCHESTER, N. Y.



ESTABLISHED 1853

*Makers of Optical Glass and a Complete Line of Optical Instruments for Military Use, Education, Research, Industry and Eyesight Correction and Conservation*

# Do You Know?

In Brazil raw *silk* production has reached 500,000 pounds a year.

Korea's real source of strength lies in her *water power* resources.

The average load of *freight* per train in 1943 was 1,116 tons, the highest on record.

*Accident* frequency rate of women automobile drivers exceeds that for men, but accident severity is lighter among women.

The giant *sequoias* of the High Sierra do not ordinarily produce many seeds until they are several hundred years old.

Air pressure eight miles above the earth is but two pounds per square inch while at sea level it is 14.7 pounds per square inch.

The European *corn borer* caused a loss of over \$33,000,000 to the 1943 corn crop in northeastern United States alone.

Only the United States and the Soviet Union have more *coniferous trees*—pine, spruce, hemlock, balsam—than has Canada.

Despite a record slaughter of *meat animals* in 1943, the number of livestock on farms increased again during that year.

Scarcity of fishermen in Chesapeake Bay is permitting about twice as many *shad* as usual to escape fishermen's nets to spawn in the rivers and upper sections of the Bay.

Although milk and cheese, top providers of essential *calcium*, may be scarce, adequate quantities of this mineral may be derived from loose-leaved varieties of green cabbage and green lettuce, mustard and turnip greens, broccoli and kale.

The average production of the 26,000,000 American dairy cows is about 4,700 pounds of *milk* per cow a year; that of 800,000 cows under the Dairy Herd Improvement Association, 8,000 pounds; the world's record for one cow is 41,943 pounds.

## From Page 395

common battle casualty in the First World War. In this war, surprisingly, it is notable for its rarity.

Normal men very seldom if ever develop a true mental disease—a psychosis—during combat. But unstable persons, susceptible to mental illness, may have the illness brought on by the stress of battle. It happens. But it does not happen often. Men reaching combat are, in general, very sound, strong individuals. They are not likely to be victims of the mental diseases such as schizophrenia or manic-depressive psychosis which are the most common illnesses seen in mental hospitals.

Two other types of mental defect are not so much brought on, as brought to light, by combat. These are mental deficiency—subnormal intelligence—and the kind of personality defect known to medical men as psychopathic personality. The psychopathic personality is the kind of person who, in civilian life, is the typical four-flusher, the check-pass, the bluffer and sponger, the man who is simply constitutionally unable to be four-square. This sort of person cannot stand combat; his bluff is called there.

The fifth type of mental battle casualty is blast concussion. When a bomb bursts near a man, the force of the ex-

#### GENERAL SCIENCE

## Post-War Organization

**Thorough cooperation between the sciences and professions of all nations urged as one of first considerations after victory.**

Need for thorough cooperation between the sciences and professions of all nations after the war was voiced by Morris S. Rosenthal, vice-president of the National Council of Importers and former assistant director of the Board of Economic Warfare, at the National War-time Conference in New York.

"There must be a basic international organization to deal with the broad political and economic problems essential to the maintenance of world peace. . . . Subsidiary to this parent international organization, organizations should be established to formulate collaborative programs in the fields of science," Mr. Rosenthal declared.

An international educational program with a permanent working staff should be created, the speaker advocated. The

plosion may do severe damage to the tissues of his body. He may bleed inwardly, and may have hemorrhage of the brain. The mental effect is just about the same as though he were hit a terrific blow over the head. He is knocked out. He may be unconscious or dazed for a long time afterward.

Such blast concussion cases, all the psychoses and organic mental disease cases along with all severe cases of mental deficiency and psychopathic personality are immediately evacuated from the front-line area.

All but the most severe of the anxiety type psychoneurosis cases are kept and restored, if possible, without delay to active duty.

I have asked military physicians whether these men with mental battle injuries might be mistaken for malingerers—whether it is ever hard to be sure they are not "putting on" because they find combat too tough for them. The answer is no. No one who has seen these men coming from the front lines could fail to realize their suffering is real. The soldiers they fight with recognize their illness as genuine, and many a man has left his foxhole at grave risk of his own life to bring in a mentally wounded man who has become unable to seek cover without aid.

Science News Letter, June 17, 1944

major function of this program would be to educate all countries of the world about the people of other countries. A secondary function would be to set up international exchanges of students and teachers, and arrange for high school and college students to take vacation trips in countries other than their own, accompanied by their teachers.

Mr. Rosenthal also proposed an international medical society for the rapid dissemination of information about new medical discoveries so that they may become quickly available to doctors in all parts of the world. This organization would also assist nations with poor medical organizations in building up their facilities for taking care of the sick.

In the field of patents, Mr. Rosenthal suggested an international patent organi-

zation, to distribute information about patents granted in all countries and facilitate the use of patents in all parts of the world. Patents granted in any one country would be subject to license and royalty in all countries wishing to use the patents industrially or commercially. Patents would be available to all producers in all countries of the world at

## PSYCHOLOGY

## Advice for War Hostesses

**Mrs. Roosevelt gives hints to government girls on how to meet and talk with men returning from the fighting in Europe.**

► HINTS on how to meet and talk with soldiers who come back from the European invasion, wounded in mind or in body, were given by Mrs. Franklin D. Roosevelt, herself a mother of service men, to a group of Washington, D. C., Government employees, the PAW-ETS.

PAW-ETS means Petroleum Administration for War Entertainers to Service Men. The girls who belong to this group are giving parties at local hospitals for service men.

"If you are going to talk to the soldiers coming back, you should have at least a bowing acquaintance with the questions they are going to ask," Mrs. Roosevelt told the girls. "Suppose he asks you whether he is going to be able to drive a car or 'Can I ever fly again?'

"You won't know, but you had better know about a lot of people who have done things with handicaps."

Stories of actual accomplishments of men who have lost a leg or an arm or who are otherwise handicapped may serve as encouragement to the wounded man who has yet to find out what he will be able to do.

This is especially important with enlisted men, Mrs. Roosevelt believes from her experience in talking to soldiers in hospitals, reconditioning centers and elsewhere around the world. Enlisted men seem to find it much harder than do officers to get started doing things. They are more apathetic.

A feeling of bitterness and doubt that their sacrifices are worthwhile is something you may encounter in returning service men, Mrs. Roosevelt said, although she explained that you will see almost as many different attitudes as there are men returning.

Mrs. Roosevelt's address followed a

the same fee or royalty, without restriction as to markets or the fixing of prices, or quotas of production.

"This would assure all nations of the world the maximum use of new scientific discoveries and also maintain the system of free enterprise. Inventors would be rewarded through a fair license fee or royalty," Mr. Rosenthal concluded.

*Science News Letter, June 17, 1944*

**Mrs. Roosevelt gives hints to government girls on how to meet and talk with men returning from the fighting in Europe.**

session in which the modern mind-healing technique of psychodrama is being adapted for the training of these girls for the job of hostess to the service men. In psychodrama, the actors and actresses go onto a stage and with absolutely no previous rehearsal act out a situation prescribed by the director. The situations are all real life scenes and so, in this case, it is the drama which is the rehearsal for what may follow in life.

Sailors, guests of the PAW-ETS, played the part of wounded veterans as one of the girls would go up on the stage to try to cheer him up or listen attentively to his gloomings or gripings.

After each scene, both hostesses and service men joined in criticism of the way in which the particular situation

was handled by the girls in training.

Director of the psychodramatic training sessions is Dr. Bruno Solby, medical officer of the U. S. Public Health Service.

*Science News Letter, June 17, 1944*

## ENGINEERING

## Glass Fiber Sheets Used For Insulating Aircraft

► SHEETS of glass fibers, the lightest inorganic material commercially available for sound-proofing and insulating aircraft, are being used in the flight decks and cabin walls of many types of U. S. Army planes to provide protection against the extreme cold of stratosphere flying, and to deaden fatigue-causing sound. They gain less than 1% of their own weight from moisture in the air. Organic material, frequently used, may pick up 40% of its own weight in moisture.

The glass fiber sheets, weighing only one-twentieth of a pound per square foot, are made up of millions of tiny glass fibers, bound with a thermosetting resin and formed into sheets one-half inch thick.

With planes operating at altitudes where temperatures of 60 degrees below zero Fahrenheit are commonly encountered, insulation is necessary to reduce the burden on heating equipment.

These fibrous glass sheets are being manufactured for war uses only, by the Owens-Corning Fiberglas Corporation.

*Science News Letter, June 17, 1944*



## Like Mineral Study?

WARD'S IS WORLD HEADQUARTERS FOR TEACHING SPECIMENS AND COLLECTIONS... AND FOR RARE AND BEAUTIFUL EXHIBITION MINERALS

• Mineralogy instructors and departments look to Ward's as the world's foremost supplier of teaching specimens and collections. Mineral collectors, too—those who delight in the collection and study of specimens that portray the wondrous structure and formation of our earth—find at Ward's minerals of rare beauty and interest. Catalogs (at left) available on request: N-441, Mineral Specimens for Collectors and Museums; N-443, Mineral Rock and Fossil Collections.

**WARD'S** NATURAL SCIENCE ESTABLISHMENT, INC.  
P. O. Box 24, Beechwood Station  
ROCHESTER 9, N. Y.

## NUTRITION

**Advice Given To Go Easy On Use of Chocolate Milk**

► MANY MOTHERS have for years been giving chocolate or cocoa-flavored milk to their children or others in the family. The object has been to get those who do not like the taste of milk to drink more of this healthful beverage. Doctors and nutritionists generally have approved the idea.

Now comes news of nutrition studies at Massachusetts State College suggesting that it may be wise to go easy on the chocolate milk, especially in wartime diets. (NUTRITION REVIEWS)

These studies with white rats showed that the presence of cocoa in the diet depressed the nourishing value of milk. The animals on the cocoa-supplemented diet were getting 11% more calories than those on diets without the cocoa. In spite of this, however, there was about an 11% decrease in the growth rate of the animals, 10.6% for the males and 12.3% for the females.

Previous studies had shown that cocoa decreased the digestibility of milk proteins. This is believed to explain in part

**pH INDICATOR HELPS MAINTAIN WATER QUALITY**

Checking the pH of water is a job in which E&N equipment can help all the way from the stream, lake or well to the finished water tank or boiler.

For laboratory use, we recommend Glass-Electrode Indicator No. 7662 shown above. This instrument reads directly in pH and retains its full accuracy at temperatures up to 85 F (30 C) in atmosphere of 95 per cent relative humidity. It requires practically no maintenance; principal items are filling the reference electrode's salt bridge with KCl crystals every 6 or 8 weeks, and occasionally cleaning electrodes or replacing batteries. This indicator is furnished with all accessories and supplies. For details, see Catalog E-96 (2).

**LN** LEEDS & NORTHRUP COMPANY, 487 STENTON AVE., PHILA. 44, PA.  
MANUFACTURERS OF INSTRUMENTS - TELEMETRIC - AUTOMATIC ORNITHOLOGY - MULTI-TREATMENT FURNACES

Jrl. Ad. E-96-701(1b)

the depression of the growth rate in the rats with the cocoa supplement to their diet.

Even more striking were the figures showing that the rats on the cocoa diet retained almost a fourth less calcium than the animals on the non-cocoa diet, even though the cocoa diet contained more calcium. There were almost as great decreases in the amount of phosphorus the cocoa diet rats were able to utilize from their food.

The underlying cause or causes for the decreases in growth rate and mineral retention when the rats were on a diet containing chocolate milk are not

## MEDICINE

**Rat-Bite Fever Remedy**

► RAT-BITE FEVER, a weakening and sometimes serious disease, may yield to penicillin treatment, it appears from studies reported by Dr. F. R. Heilman and Dr. W. E. Herrell, of the Mayo Clinic. Assisting in the research were Miss Constance Carter and Miss Nellie Greenburg.

In this disease the fever comes one to three weeks after the bite of the rat. The bite itself usually heals without giving any trouble. The fever when it starts lasts for several days, drops, and then rises again sometimes to as high as 106 degrees Fahrenheit. It may be caused by either of two germs, *Spirillum minus* and *Streptobacillus moniliformis*. The

explained by the studies so far. Whether the chocolate milk taken daily would make the same difference in human nutrition apparently has not yet been investigated. However, with a sharp curtailment in milk supplies a possibility, it becomes increasingly important, as the editor of *Nutrition Reviews* points out, to utilize to the maximum the protein and minerals of the milk that is available. The findings on rats may, therefore, lead nutrition and medical authorities to issue a word of warning about the amount of milk to be taken as chocolate milk.

Science News Letter, June 17, 1944

latter also may cause epidemic sickness which does not come from a rat bite.

Mice infected with either of these germs were cured by penicillin treatment, whereas untreated mice all got sick and 42 of the 43 infected with *Streptobacillus moniliformis* died.

Previous treatment for infections with these germs was to give arsenic-containing drugs or gold salts. Both of these medicines may be followed by toxic reactions. One of penicillin's great advantages is that it does not cause toxic reactions. The Mayo Clinic doctors therefore suggest that penicillin should prove useful in treating these infections in man.

Science News Letter, June 17, 1944

## NUTRITION

**Navy Tip To Housewives**

Latest tip to housewives and restaurant chefs on conserving vitamins in salads comes from scientists at the Naval Medical Research Institute in Bethesda, Md.

Use a plastic knife instead of a metal one for cutting the vegetables and fruits for salads, cut them in large pieces, and prepare just before serving, is the advice of Dr. C. M. McCay and Dr. Michael Pijoan of the Research Institute and H. R. Taubken of the Naval Hospital Commissary.

Very little of the vitamin was lost when vegetables were cut with a plastic knife, compared to the losses when steel knives or the mess-hall mincing machine, called a "Buffalo chopper," were used, the scientists report. (Science, June 2).

Plastic knives, with a serrated edge like cake or bread knives, can be obtained at drug stores for 25 cents, Dr. McCay says. The "Buffalo chopper" is a bowl set under a pair of rotating metal blades. He and his colleagues suggest that a plastic bowl and knife might be devised for the "Buffalo chopper" for use in large-scale feeding establishments.

A considerable amount of vitamin C is lost when cut vegetables and fruits are exposed to the air, even when a plastic knife is used.

When a metal knife is used, Dr. McCay explained, enough iron is picked up in finely divided form to act as a catalyst to speed the oxidation which destroys the Vitamin C when cut vegetables or fruits stand exposed to air.

Science News Letter, June 17, 1944



An Unholy Trinity

► POISON IVY, in one form or another, is almost continent-wide in its distribution. It ranges from Ontario southward to Florida and westward into the timber-strips along the streams of the Great Plains. A close relative, the Pacific Coast poison oak, takes up its fiendish job of promoting blisters-and-itch in the Far West.

These two species look so much alike they might as well be twins: trifoliate leaves, sometimes smooth-margined, sometimes notched or even deeply lobed, standing out on stiff woody stems which in turn are borne on a vine-like stalk shaggy with short roots. This stalk sometimes climbs trees and fences, sometimes runs along just under the ground surface like a shallow rootstock.

With so much variability in the species (sometimes even the same plant will have several different types of leaves) the ordinary citizen might almost despair of learning what poison ivy looks like, and hence being able to avoid it. However, one thing is constant through all this inconstancy: the triad of leaflets that make up the compound leaf. There is sound botany as well as sound advice in the old jingle: "Leaflets three, let it be!"

Best way to keep from getting ivy poisoning is to keep from getting too near to poison ivy. Don't touch the plant, and don't touch anything that you know has touched it. If you have inadvertently made contact with it, go and wash your hands and other exposed skin surfaces at once. Strong laundry soap is better than the ordinary mild toilet soaps for this purpose.

You may armor your skin against poison ivy in several different ways. The U. S. Public Health Service has a recommended formula for an ointment;

though it is understood that this is not always obtainable at present because of war-caused shortage in one of the necessary ingredients. There is another formula, older but still effective: a five per cent solution of ferrous sulphate in a half-and-half mixture of water and alcohol. Washed on the skin and allowed to dry, it deposits an invisible coating of the iron salt that neutralizes the poison before it can take effect. The same solution is also good for treatment, if exposure has already taken place.

Some persons are so sensitive to the plant's poison that no preventive treatment seems to give them any protection. On the other hand, about one person in three is so insensitive that he can handle the weed without ill effects. It is improbable, however, that there is any such thing as total immunity: if an insensitive person's resistance once breaks down, he is thereafter likely to be poisoned by the slightest contact.

Science News Letter, June 17, 1944

### Just Off the Press

THE BABY MANUAL: A Practical Guide from Early Pregnancy through the Second Year of Life—Herman N. Bundesen—*Simon and Schuster*—590 p., illus., \$3.

DOLL PLAY OF PILAGA INDIAN CHILDREN: An Experimental and Field Analysis of the Behavior of the Pilaga Indian Children—Jules and Zunia Henry—*Am. Orthopsychiatric Assoc., Inc.*, 133 p., \$3.

DOWN TO EARTH: Mapping for Everybody—David Grenwood—*Holiday House*—262 p., illus., maps, paper, \$4.

EXPERIMENTAL SPECTROSCOPY—Ralph A. Sawyer—*Prentice-Hall*, 323 p., illus., \$5

MANDATE FROM THE PEOPLE—Jerome S. Bruner—*Duell, Sloan & Pearce*, 278 p., charts, \$2.75.

THE NAVY'S WAR—Fletcher Pratt—*Harper*, 295 p., illus., \$2.75.

PSYCHIATRY AND THE WAR, a survey of the significance of psychiatry and its relation to disturbances in human behavior . . . —Frank J. Sladen, ed.—*C. C. Thomas*—505 p., \$5. This book consisting of contributions to the Conference on Psychiatry of the University of Michigan and McGregor Fund is authoritative as well as interesting and timely.

Science News Letter, June 17, 1944

### MILITARY SCIENCE

### No Shelter of Darkness Along the Normandy Coast

► SOLDIERS fighting along the Normandy Coast will have no shelter of total darkness for night attacks. Twilight lasts all night for places with a latitude of 50 degrees or farther north, and it is just south of this that our men

are making their blows against the Axis felt where they count most.

From June 2 until July 12, evening twilight and morning twilight meet as far south as Dieppe, making it possible to see dimly throughout the entire night. The sun itself begins to appear at about 3:50 A. M., local time, at this season, and does not set until after 10 P. M.

In Paris there will be a short period of total darkness each night, but it will not last long enough for planes, either friendly or enemy, to secure much protection from the heavens. Farther north in Berlin, ever-present in the minds of our pilots, the city will be dimly visible from the air throughout the night.

Science News Letter, June 17, 1944

Butter produced in the summer is a better source of vitamin A than winter butter.

### STEP UP YOUR EARNING POWER!

### KNOW CHEMISTRY

### NEW 4th EDITION—JUST OUT!

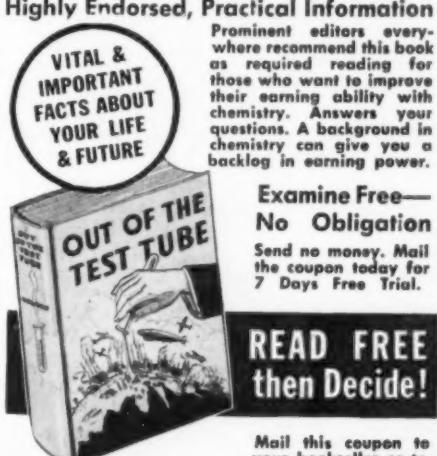
• Revised and Expanded.  
Includes POST-WAR Chemistry

#### 102 Pictures—Easy to Understand

THE MODERN BOOK EVERYONE NEEDS! For executives, plant assistants, war workers and students. Presents vital subject of chemistry. Your health, your home, your food, your car, yes even your job is affected by the many modern advances in Chemistry. Helps you understand your job and make your life more profitable. Over 300 large pages. Over 100 explanatory illustrations. *OUT OF THE TEST TUBE* is written by the famous chemist, Dr. Harry N. Holmes, Prof. of Chemistry, Oberlin College, 1942 President of American Chemical Society.

#### Highly Endorsed, Practical Information

Prominent editors everywhere recommend this book as required reading for those who want to improve their earning ability with chemistry. Answers your questions. A background in chemistry can give you a backlog in earning power.



Examine Free—  
No Obligation

Send no money. Mail the coupon today for  
7 Days Free Trial.

READ FREE  
then Decide!

Mail this coupon to  
your bookseller or to

EMERSON BOOKS, Inc., Dept. 402-C,  
251 West 19th St., New York 11, N. Y.  
Send copy of "Out of The Test Tube". I will pay  
only \$3 (plus few cents postage). I must be sat-  
isfied or will return book in 7 days for refund.

Name \_\_\_\_\_  
(Please Print)

Address \_\_\_\_\_  
 Check if you enclose \$3, thus saving delivery  
charges. (Same money-back guarantee)

# •New Machines and Gadgets•

• **SAUCER** with two depressions in it, one to hold the cup of coffee in place and the other to hold the tiny bottle of cream, has been granted a patent. It is designed for use in cafes, to decrease spillage and breakage.

Science News Letter, June 17, 1944

• **OIL REFINERS**, made in two sizes, clean lubricating oil with continuous and automatic operation and are capable of removing fuel dilution, acids, solid and colloidal carbons, dirt and similar matter. They use common refinery earths available on the open market.

Science News Letter, June 17, 1944

• **SAFETY** cut-off valve, to cut the fuel gas supply piped into a building, closes automatically in case of fire when the heat softens a plastic link that holds the stem from the seat of the valve. The plastic spreads, breaks or becomes elastic, permitting the stem to make close contact with the seat.

Science News Letter, June 17, 1944

• **FACTORY** safety goggles, to resist the impact of flying particles, use glass lenses which were scientifically toughened. Finished lenses are reheated and then their surfaces are rapidly cooled by compressed air. Under polarized light



the toughened lenses reveal the black pattern shown in the picture.

Science News Letter, June 17, 1944

• **SNUFF DIPPER** which permits snuff to be dipped in a dignified manner, consists of a small cupshaped spoon with a rotary rod running lengthwise throughout the handle. When the rod in this patented device is turned by thumb and finger, a loop on its end empties the snuff from the cup.

Science News Letter, June 17, 1944

• **MARGARINE** may be colored without removal from its inside wrapping if a newly patented method of packaging is used. The inner wrapping is a flexible vaporproof material with the coloring placed inside it in a breakable envelope. Kneading the contents by hand when soft releases the coloring and mixes it thoroughly with the margarine.

Science News Letter, June 17, 1944

• **PORTABLE** hammock, recently patented, has two pivoted long arms and two pivoted short legs as side members on a frame. When open, the four pieces form a diamond-shaped center, with the frame supported from the ground by the legs. The hammock swings from the ends of the arms.

Science News Letter, June 17, 1944

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 212.

## Don't Delay

getting that **new book** you want to read. SCIENCE NEWS LETTER will gladly obtain for you any American book or magazine in print. Send check or money order covering regular retail price (\$5 if price is unknown, change to be returned) and we will pay postage in the United States. When publications are free, send 10c for handling. Address:

### Book Department

SCIENCE NEWS LETTER  
1719 N St., N. W. Washington 6, D. C.

## Question Box

### CHEMISTRY

What can Army photographers tell about factories from the color of their smoke? p. 393.

### ENGINEERING

How are Army trucks tested for wear from dust and sand? p. 387.

How can you see what goes on in an engine during detonation? p. 387.

What can the Navy make with its new pontoons? p. 392.

What is plywood doing at the front? p. 389.

### GEOGRAPHY

Through what sort of country are our troops fighting? p. 388.

### MEDICINE

How close to the front do medical aid men go? p. 390.

How were mice cured of rat-bite fever? p. 398.

What new treatment for shock has been successful for rats? p. 392.

What is "black gold"? p. 388.

### NUTRITION

How may the use of mineral oil harm you? p. 393.

Why do Navy doctors advise you to use a plastic knife to cut fruit? p. 398.

Why is it best to go easy on the use of chocolate milk? p. 398.

### PSYCHIATRY

Where do soldiers with mental wounds get treatment? p. 391.

### PSYCHOLOGY

Why may we expect an increase in tales of the supernatural? p. 389.

### PUBLIC HEALTH

How successful is sulfadiazine as a meningitis preventive? p. 387.

Where published sources are used they are cited.

The imprint to the right is mailing address for your Science News Letter.

Date on lower line is expiration of your subscription.

Renew early to avoid lapse in service.

In requesting change of address please give your old address as well as the new one, at least two weeks before change is to become effective.